

What is claimed is:

1. A multi-link receiving mechanism, comprising:

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a first receiver coupled to receive a first data stream and a clock signal, said first data stream comprising a first plurality of data units, said first receiver delaying said clock signal by a first variable delay to derive a first reference signal, and generating a first plurality of latching control signals based upon said first reference signal to latch said first plurality of data units; and

a second receiver coupled to receive a second data stream and said clock signal, said second data stream comprising a second plurality of data units, said second receiver delaying said clock signal by a second variable delay to derive a second reference signal, and generating a second plurality of latching control signals based upon said second reference signal to latch said second plurality of data units.

2. The receiving mechanism of claim 1, wherein said first data stream and said second data stream are not aligned with each other when received by said first receiver and said second receiver, respectively.

3. The receiving mechanism of claim 2, wherein said clock signal is not necessarily aligned with either said first data stream or said second data stream.

4. The receiving mechanism of claim 3, wherein said first receiver adjusts said first variable delay based upon relative alignment between said first data stream and said clock signal.

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5. The receiving mechanism of claim 4, wherein said second receiver adjusts said second variable delay based upon relative alignment between said second data stream and said clock signal.

6. The receiving mechanism of claim 3, wherein said first variable delay and said second variable delay are different delays.

10 7. The receiving mechanism of claim 6, wherein each of said first plurality of data units occupies one data period, wherein each of said second plurality of data units occupies one data period, and wherein both said first variable delay and said second variable delay are greater than or equal to one data period.

15 8. The receiving mechanism of claim 3, wherein each of said first plurality of data units occupies one data period, and wherein said first reference signal coincides approximately with a midpoint of a data period corresponding to one of said first plurality of data units.

20 9. The receiving mechanism of claim 8, wherein each of said second plurality of data units occupies one data period, and wherein said second reference signal coincides approximately with a midpoint of a data period corresponding to one of said second plurality of data units.

10. The receiving mechanism of claim 3, wherein each of said first plurality of data units occupies one data period, and wherein said first receiver generates no more than one of said first plurality of latching control signals per data period.

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5 11. The receiving mechanism of claim 10, wherein each of said first plurality of latching control signals coincides approximately with a midpoint of a data period corresponding to one of said first plurality of data units.

10 12. The receiving mechanism of claim 11, wherein each of said second plurality of data units occupies one data period, and wherein said second receiver generates no more than one of said second plurality of latching control signals per data period.

15 13. The receiving mechanism of claim 12, wherein each of said second plurality of latching control signals coincides approximately with a midpoint of a data period corresponding to one of said second plurality of data units.

20 14. The receiving mechanism of claim 13, wherein said first receiver comprises a first delay control mechanism for adjusting said first variable delay, and wherein said second receiver comprises a second delay control mechanism for adjusting said second variable delay.

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15. The receiving mechanism of claim 14, wherein said first delay control mechanism adjusts said first variable delay to cause said first receiver to generate said first plurality of latching control signals such that each of said first plurality of latching control signals coincides more closely with a midpoint of a data period corresponding to one of said first plurality of data units.

16. The receiving mechanism of claim 15, wherein said second delay control mechanism adjusts said second variable delay to cause said second receiver to generate said second plurality of latching control signals such that each of said second plurality of latching control signals coincides more closely with a midpoint of a data period corresponding to one of said second plurality of data units.

17. The receiving mechanism of claim 16, wherein said first delay control mechanism adjusts said first variable delay to cause said first reference signal to coincide more closely with a midpoint of a data period corresponding to one of said first plurality of data units.

18. The receiving mechanism of claim 17, wherein said second delay control mechanism adjusts said second variable delay to cause said second reference signal to coincide more closely with a midpoint of a data period corresponding to one of said second plurality of data units.

19. The receiving mechanism of claim 16, wherein said first delay control mechanism comprises:

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a detection mechanism, said detection mechanism receiving an indication of how closely each of said first plurality of latching control signals coincides with a midpoint of a data period corresponding to one of said first plurality of data units, and providing an adjustment signal to adjust said first variable delay.

20. The receiving mechanism of claim 19, wherein said detection mechanism comprises a phase detector.

21. The receiving mechanism of claim 19, wherein said first delay control mechanism further comprises:

a fixed delay element coupled to receive at least one of said first plurality of latching control signals and providing a delayed latching signal; and

a latching component coupled to receive said first data stream, said latching component latching one of said first plurality of data units in response to said delayed latching signal.

22. The receiving mechanism of claim 21, wherein said detection mechanism receives said one of said first plurality of data units, and compares said one data unit with a plurality of other data units from said first plurality of data units to determine how closely each of said first plurality of latching control signals coincides with a midpoint of a data period corresponding to one of said first plurality of data units.

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23. The receiving mechanism of claim 22, wherein said fixed delay element has a fixed delay greater than one data period.

5 24. The receiving mechanism of claim 23, wherein said fixed delay is approximately $(X + .5)$ times said data period where X is an integer greater than or equal to 1.

25. The receiving mechanism of claim 3, wherein said first receiver comprises
10 a first delay locked loop coupled to receive said first reference signal, said first delay locked loop generating said first plurality of latching control signals based upon said first reference signal, and wherein said second receiver comprises a second delay locked loop coupled to receive said second reference signal, said second delay locked loop generating said second plurality of latching control signals based upon said second reference signal.

15 26. The receiving mechanism of claim 25, wherein each of said first plurality of data units occupies one data period, wherein said first delay locked loop generates no more than one of said first plurality of latching control signals per data period, and wherein each of said first plurality of latching control signals coincides approximately
20 with a midpoint of a data period corresponding to one of said first plurality of data units.

27. The receiving mechanism of claim 26, wherein said first reference signal coincides approximately with a midpoint of a data period corresponding to one of said first plurality of data units.

5 28. The receiving mechanism of claim 27, wherein each of said second plurality of data units occupies one data period, wherein said second delay locked loop generates no more than one of said second plurality of latching control signals per data period, and wherein each of said second plurality of latching control signals coincides approximately with a midpoint of a data period corresponding to one of said second
10 plurality of data units.

29. The receiving mechanism of claim 28, wherein said second reference signal coincides approximately with a midpoint of a data period corresponding to one of said second plurality of data units.

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